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COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
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Hazardous Sites Cleanup Program
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November 8, 1990

Ms. Christine Chulick
Remedial Project Manager
U.S. EPA - Region III (3HW21)
841 Chestnut Building
Philadelphia, PA 19107

RE: Revised Feasibility Studies
Eastern Diversified Metals (EDM)
Schuylkill County

Dear Christine:

The following comments were generated during our review of the subject documents. Review of Revision No. 1 (May, 1990) had been deferred until completion of Revision No. 2 (September, 1990) because of the substantial changes made in the second revision. Revisions No. 1 and No. 2 are reviewed jointly in this letter. Comments are grouped according to operable unit below. As agreed in our meeting of October 23, 1990, the main area of emphasis for this response will be Operable Unit 1. The Department's comments on Operable Unit 2 are extensive, and will be transmitted as a separate comment letter at a later date; they will, however, be outlined in brief, as part of this review.

The coordination/cause-and-effect interrelationships between the Operable Unit 1 Alternatives (Outlined Below) and the Operable Unit 2 Alternatives (Source Control Measures) have been thoroughly investigated. There should not be any difficulty introduced by a delayed submittal of the Operable Unit 2 comments; in any case, the additional time will permit the most effective development of the design elements that we expect to offer as part of the Operable Unit 2 comments.

The EDM site is currently organized as two operable units:

1. Surface Water, Groundwater, Soil, Sediment, and Hot Spots.

2. The Fluff Pile.

OPERABLE UNIT ONE

Introduction

The remediation elements addressing Operable Unit 1 consist of the following:

* Site Preparation
* Consolidation of Scattered Debris
* Handling of Media Exceeding Target Levels
* Surface Water Runoff Controls & Site Preparation
* Leachate/Groundwater Collection & Treatment

For convenient reference, the details of each remediation element (per FS Table 4-13) are assembled as an attachment to this letter. (For completeness, we note that there are elements - possible under certain remedial action alternatives for Operable Unit 1 - which are not included in this particular table; however, the detail is sufficiently comprehensive for purposes of the following discussion.)

Incineration and Air Quality ARARs

Reference to the attachment shows a number of items grouped under "Handling of Media Exceeding Target Levels" (Hot Spots); items 14,15,&16 can be identified as the tasks which comprise the incineration subgroup of this remediation element. The feasibility study cites certain state regulations for hazardous waste incineration - PA Code, Title 25, Chapter 75, Part 264(w) - as Relevant and Appropriate requirements. (These have now been renumbered as Section Nos. 264.340 - 264.353.) These regulations are listed as ARARs for the Fluff Pile Incineration Alternative in the text (p. 4-68, Revision No. 2) and in the ARARs table (Table 2-4, Potential Action Specific ARARs); by extension, these regulations would be ARARs for the Hot Spots Incineration subgroup of the Handling remediation element of Operable Unit One.

There is an additional Action-Specific State ARAR which may have application to the on-site use of the mobile incinerator for the EDM hot spots. Chapter 127 of the Pennsylvania Air Pollution Control Act (APCA) should be cited as well. As detailed in the consultant's review (Dynamac Corporation, p. 22), of the ERM FS, the remediation time for hot spots incineration is fundamentally dependent on statutory limits for the emission rate of vaporized lead to the atmosphere.

Incineration and Uncertainty in Remediation Time

Insofar as Operable Unit One is concerned, only the PCB & Dioxin-contaminated hot spots (4660 tons) are involved. Thus, it might appear that the remediation time for hot spots is relatively minor in relation to site-wide remediation projected by various sources.

Projection by ERM: The ERM FS does not specify the remediation time for the hot spots; however, the Fluff Pile Incineration Alternative does project a feed rate for a mobile incinerator (contingent upon the results of a test burn) under an idealistic (best case) scenario. This feed rate, in conjunction with the time requirements specified for advance scheduling (2 years, p. 4-72) can be used to develop a base case remediation time for a rotary kiln or infrared incinerator. (Mob/Demob time is not factored in, and time for feed preparation - sorting, crushing, shredding - is not included.)

Reference to page 4-76, Revision No. 2, indicates that a Tier III Risk Analysis applied to the NAAQ Maximum Emission Limit of 1.5 micrograms/m3 results in a projected feed rate of 2.4 tons per hour. With 24 hour per day operation and 25% downtime, this results in a projection of 3.5 months for incinerator operation. Thus, time to completion for Handling of Hot Spots would be:

2.0 yrs (Retaining Time)
+ 0.3 yrs (Pilot Test Time)
+ ??? (Ash Stabilization)
+ ??? (Ash Transport/Disposal

Projections by Other Sources: The ERM FS feed rate appears to be based only on air emissions limits for lead vaporized from the fluff. The Consultant's report (Dynamac Corporation) points out that the throughput rate achievable for the incinerator would be highly dependent on the BTU Content and Moisture Content for the feed. Dynamac was able to generate a ballpark-type estimate (without specifying a heating value or a moisture content) in a manner similar to the ERM approach. Their calculations show that there is great uncertainty in the amounts of lead expected to be vaporized from the fluff during the burn. This ranges from a minimum emission (1% of the 1.145 % average lead content) to a maximum emission (5% of the 1.145% average lead content). The corresponding minimum and maximum incineration times covers a range from 2.2 years to 10.8 years. Note that even the Dynamac optimistic case (2.2 yrs) is an order of magnitude greater than the ERM optimistic case (0.3 yrs).

Consequence: Although this wide variance may not have serious repercussions, it should be investigated. Considering advance scheduling for the mobile unit (The 2 year Retainer Time) and and the pessimistic projection for incinerator operation time (Nearly 11 years), Handling Of Hot Spots could extend beyond 13 years. This fact should be mentioned in any addendum to the FS, or, if there are none, in the Proposed Plan for Operable Unit One.

Leachate/Groundwater Treatment and Air Quality ARARs

Table 4-13, Item 33 references a system using Aeration, Chemical Precipitation, and Filtration. The Air Stripping stage would be required to comply with Chapter 127, Section 14 of the PA Air Pollution Control Act (APCA). Although the concentration of TCE in the off-gas is not expected to be so great that a permit is required, an exemption will most likely be involved.

Groundwater Collection and Treatment Alternatives

The Revised FS lists four groundwater alternatives:

* GW-1 Shallow Groundwater Collection/Continued WWTF Treatment
* GW-2 Shallow Groundwater Collection/Continued WWTF Treatment and Deed Restrictions
* GW-3 Shallow and Deep Groundwater Collection and Discharge
* GW-4 Shallow and Deep Groundwater Collection and (New) Treatment

It is recognized that certain aspects of Groundwater Collection (The ERM Recovery Plan) may be supplanted by elements detailed in the Dynamac Report. However, this material was not available to the Department's hydrogeologist in time for review in this comments letter. Comments on the Dynamac advisements will be limited to the issue of placing the wells closer to the pile. This is addressed below (GW-4, Recovery from Bedrock).

GW-1 & 2 are as originally proposed in the Draft FS. As indicated in our comments letter on the Draft FS (3/12/90), p. 4,5,6, these alternatives are not acceptable to the Department. GW-3 - as described in the Revised Feasibility Studies - would be unacceptable as well. GW-3 proposes discharge of the collected groundwater to the Little Schuylkill River (LSR) without treatment.

The projected concentrations of manganese after dilution would constitute an incremental, in-stream concentration of 2,089 ppb per Appendix F-2. This conflicts with the concentration cited on P. 3-31 (0.2 ppm) by an order of magnitude. The report does not provide any development of the 200 ppb (0.2 ppm) figure from the 2,089 ppb figure. The projected concentration of 2,089 ppb greatly exceeds the secondary MCL value of 50 ppb for manganese. (The 50 ppb value is regarded as an Appropriate Requirement, i.e., a Pennsylvania ARAR.) It is acknowledged that the secondary MCL value is a Secondary Drinking Water Standard and that the LSR is not a Drinking Water source; it can be argued that - considering the acid mine drainage already present in the LSR - the proposed manganese discharge would represent a relatively minor adverse impact. However, elevated iron levels are another facet of acid mine drainage conditions, and the proposed discharge would constitute an increment in iron levels as well as manganese levels. (Appendix F-2 cites an incremental, after-dilution concentration of 1,950 ppb iron.) This could represent aggravation of the current acid mine drainage situation.

GW-4: Groundwater Collection and Treatment - As Revised: This Alternative (p.3-33) encompasses the recovery techniques discussed under the GW-3 Alternative (Section 3.3.7.3, p. 3-27 to 3-32). The following comments thus refer to the GW-3 material (Groundwater Collection and Discharge) in regard to the collection of the groundwater because the collection technique is common to both Alternatives GW-3 and GW-4. (It should be kept in mind that the Department continues to support Alternative GW-4. GW-3 is not acceptable.)

1. Collection of Overburden Groundwater (Western Half)

   ERM states that the trenches would be deepened to bedrock, which is approximately 20 feet below the ground surface. (The overburden groundwater interceptor system would work in tandem with two pumping wells in a bedrock fracture at a depth of 109 to 202 feet (Reference Appendix D-6), located at the bottom of the intermittent stream valley, towards the west end of the EDM site.) Discussions with the Regional Hydrogeologist identified two aspects which may need further investigation:

   (i) Non-Intercepted Flow in Weathered Zone

   The interceptor trench would be deepened to the top of the bedrock. This would be the top of the weathered bedrock, which is located at a depth of 18-20 feet along much of the designated route. Based on examination of the drilling logs for the monitoring wells along the proposed route, the weathered bedrock can represent a thickness of 10 feet.

These weathered sandstone units are often horizontally permeable to a degree which would circumvent the drawdown and capture of weathered bedrock groundwater by the pumping wells in the competent bedrock at depth. Thus, there is a possibility of preferential horizontal flow beneath the bottom of the proposed interceptor trench. This could result in a significant amount of contaminated groundwater escaping treatment.

If weathered bedrock is encountered below 20 feet, it may be easily excavatable. In this case, it would be advisable to deepen the interceptor trench to the top of the competent bedrock. This would result in the capture of any preferential horizontal flow.

(ii) Allowances for Sideslopes: If the depth of the interceptor trench exceeds 20 feet, the necessary allowances for sideslopes may present difficulties in the proposed route (as shown in Figure 3-1). There may be inadequate room in the vicinity of the equalization lagoon and the WWTF.

2. Recovery from Bedrock: The Pumping Well System

As to the Dynamac plan of locating the wells closer to the pile (our understanding is that this might be a location somewhere to the south of the equalization lagoon), the exact location would be an issue to be evaluated in the Remedial Design stage. For purposes of FS stage comments, we would merely point out that, in addition to capturing continuing leachate*, the recovery wells must function to collect all contaminated groundwater from the western extremity of the site, for delivery to the Aeration/Precip/Filtration System. If the wells are located too far to the east of the equalization lagoon, contaminated groundwater along the western extremity of the site may be outside of the recovery wells' cone of depression.

*The trench would function to intercept leachate which bypasses the internal leachate collection drain. (Under closure actions currently being considered for Operable Unit Two, there would be continuing generation of leachate until residual water in the pile is exhausted.)

The following comments refer to statements in ERM Appendix D, pages D-6 to D-7.

(i) The last paragraph, p. D-6, indicates that the estimated flow requirement of 130-150 gpm appears to be compatible with the 28 gpm figure measured for the 15 foot screened interval at the MW5-I fracture.

(ii) The first paragraph, p. D-7, indicates that the actual number of wells required would be determined by additional aquifer testing during the Remedial Design Stage.

We suggest that this additional aquifer testing be specified in the Proposed Plan, and implemented as soon as practicable. The effectiveness of any pump-system will depend on adequate recovery; if all contaminated groundwater cannot be intercepted and collected, we could have a ROD that won't work.

OPERABLE UNIT TWO

On-Site Disposal Facility

This Alternative consists of a vault (i.e., a secure landfill with a double bottom liner and a leachate collection system) to be constructed on a clean area of the EDM site. The ERM FS (Section 2.6.7.4 according to the numbering in Revision No. 1) considers this option as not technically feasible. The reasoning, in brief, is that the area needed for constructing the landfill and simultaneously stockpiling the fluff would not be available unless there were extensive excavation and regrading of the property.

As outlined in our meeting (10/23/90) at the EPA Region III Headquarters, this option would not require simultaneous stockpiling if a two-stage progressive landfilling technique were employed in an alternate location. In regard to the matter of excavation, this appears to be a severe obstacle only because the area identified in the ERM FS focuses on the steeply sloping section of the site. The Department Engineer has identified an alternate area in which excavation and regrading would be much more manageable.

It is recognized that LDR restrictions specify a maximum TCLP lead concentration in leachate which may necessitate stabilization of the pile prior to landfilling in a clean area of the site; this would entail an expansion in volume, possibly as great as 100%; the volume to be landfilled might double - from the present 239,000 CY to nearly 500,000 CY (Volumes prior to compaction).

Technical Considerations

These considerations (including design specifications) will be developed in a subsequent comment letter. The thrust of the technical argument for the Vault Option will be to show that there are compelling reasons for a vault (in preference to a multi-layer cap) as the recommended alternative for Operable Unit Two.

Legal Considerations

Our comments letter on the Draft FS (3/12/90) indicated that the regulations of Chapter 75.265 of PA Solid Waste Management Act 97 would represent an Applicable Requirement (Action-Specific ARAR) in regard to an In-Place Closure measure such as an interim cap which was to be employed as part of a Recycling Option. (These regulations have been renumbered, and will now be referenced as Chapter 265, for example, rather than Chapter 75.265). At that time the Department did not have the appropriate technical staff to evaluate the ERM claim that the secure landfill option was not feasible. Since we are now contesting this claim, Chapter 264 will apply, as well as Chapter 265. Chapter 264 covers the design requirements for a bottom liner system in a new area of a site.

The Department views the Chapter 264 regulations as an Applicable Requirement (Action-Specific ARAR). The reasoning is that the On-Site Secure Landfill Option now appears to be a feasible alternative; the PRP is therefore required by law to comply with the closure details of Chapter 264, which specify a bottom liner system as well as a cap system.

OVERSIGHTS AND INCONSISTENCIES

The first of the following items should be corrected in the event that a 3rd Revised FS is prepared. Equivalently, this item could be noted in any supplement to Revision No. 2 prepared in lieu of a 3rd Revision.

1. The Revised FS contains numerous references to the EP-Toxicity Method. These references should cite the TCLP Method instead.

2. The Tables which list Chemical-Specific ARARs (Table 2-1 and Table F-1) do not reflect the concept of Background-Dependent Levels for Cleanup Criteria where State ARARs on surface water and groundwater are cited.

EPA and DER have discussed the fact that the discrepancies between the FS values and the Department's Background Dependent values would be addressed and resolved early in the ROD stage. It is simply not practical to attempt to indicate the background relationship for each contaminant at the stage of preparing the FS. However, the Department does view this comments letter as a forum to go on record that the standard in question will be the Background Standard for these Chemical-Specific ARARs.

3. The issue of Background Levels as Cleanup Criteria for Soil has also been discussed by EPA and DER. The Department's approach to defining background levels for metals in soil is to determine representative levels for corresponding soil types in up-gradient locations (i.e., locations not affected by site contamination). The Department's approach to defining background levels for organics in soil is to determine that level which produces background levels in groundwater as a result of leaching processes. This determination would be made by using a recognized Fate and Transport Model (such as the Summers Model).

   The Department's values for metals have been developed in the comments letter to the Draft FS (3/12/90). The Departments values for organics (cited as "Detection Limit" in the 3/12/90 letter) would have to be redeveloped if the Fate and Transport modeling approach were undertaken. Alternatively, EPA and DER could simply acknowledge - at the point of writing the ROD - that this will be the approach to be employed; the actual calculation of the values could be deferred until the Remedial Design stage.

In closing, I wish to thank you for giving us the opportunity to review the document. If you have any questions regarding the preceding material, please do not hesitate to call at (717) 826-2589.

Sincerely,

Thomas Ziemba

Thomas Ziemba
Project Officer

Attachment

TABLE 4-13
Backup Summary of Selected Cost Items

	Item	Quantity	Unit Cost (Low End)	Reference	Low End Installed Cost	High End Installed Cost
	Site Preparation					
1	Mobilization/Demobilization	1 Ea	$50,000.00 /Ea	ERM Experience		$50,000
2	Staging Area Construction	1 Ea	$100,000.00 /Ea	ERM Experience		$100,000
3	Electrical and Plumbing	1 Lot	$100,000.00 /Lot	ERM Experience		$100,000
4	Decon Area Preparation	1 Ea	$50,000.00 /Ea	ERM Experience		$50,000
5	Clearing, Grubbing and Road Upgrades	1 Lot	$25,000.00 /Lot	ERM Experience		$25,000
6	Trailers & Hookups	1 Lot	$75,000.00 /Lot	ERM Experience		$75,000
7	General Conditions (Security, Phones, Sanitary, Barricades, Documentation, Deed Restrictions and Fencing Upgrades)	1 Lot	$100,000.00 /Lot	ERM Experience		$100,000
				Total		$500,000
	Consolidation of Scattered Debris					
8	Loading	14,000 Cy	$5.00 /Cy	1989 Means		
9	Hauling/Moving	14,000 Cy	$2.00 /Cy	1989 Means		
10	Grading	14,000 Cy	$3.00 /Cy	1989 Means		
		Total	$10.00 /Cy			
	Handling of Media Exceeding Target Levels					
11	Excavation of Fluff w/PCBs and Dioxin	4,090 Tons	$10.00 /Ton	ERM Experience		$40,900
12	Excavation of Soils w/PCBs and Lead	1,220 Tons	$10.00 /Ton	ERM Experience		$12,200
13	Removal of Intermittent Stream Sediments	120 Cy	$30.00 /Cy	ERM Experience		$3,600
	On-site Incineration of Fluff & Soil w/PCBs and Dioxin					
14	Mobilization	1 Ea	$100,000.00 /Ea	Vendor Quote		$100,000
15	Test Burn	2 Ea	$100,000.00 /Ea	Vendor Quote		$200,000
16	Incineration of PCB & Dioxin Contaminated Materials	4,660 Tons	$500.00 /Ton	Vendor Quote		$2,330,000
17	Stabilization of Incinerator Ash	1,460 Tons	$35.00 /Ton	Vendor Quote		$51,100
18	Transport & Disposal of Stabilized Ash, Sediments and Soils With Metals Above Target Levels	9,900 Tons	$350.00 /Ton	Vendor Quote		$3,465,000
19	Analytical Work-TCLP	100 Samples	$1,000.00 /Sample	ERM Experience		$100,000
				Total		$6,302,800